CLAIMS

1) A device (400) for varying the direction of an optical beam, comprising:
   - a first waveguide (507) directed along a first direction;
   - a second waveguide (508) directed along a second direction different from the first direction; and
   - a bending region interposed between the first and the second waveguide;

characterized in that said bending region comprises:
   - a photonic crystal (502) having a regular periodicity and having at least a first and a second crystal axes substantially aligned with said first and second directions, respectively; and
   - a reflecting surface (506) delimiting said photonic crystal and so positioned and oriented as to reflect an optical beam (A) coming from the first waveguide towards the second waveguide.

2) A device according to claim 1, wherein the photonic crystal (502) comprises a slab of dielectric material and said reflecting surface is realized by removing a portion of said slab.

3) A device according to claim 1, wherein said first and second directions are perpendicular to each other.

4) A device according to claim 3, wherein the photonic crystal (502) has a periodic array of holes (2) arranged according to a square geometry.

5) A device according to claim 1, wherein said first and second directions define and angle of $\pi/3$.

6) A device according to claim 5, wherein the photonic crystal (502) has a periodic array of holes (2) arranged according to a triangular geometry.

7) A device according to claim 1, wherein at least one of said first and second waveguides (507, 508) is an optical integrated waveguide.

8) A device according to claim 1, wherein at least one of said first and second waveguides (507, 508) is an optical fibre.

9) A device according to claim 1, wherein the photonic crystal (502) is made of a bulk material with a first refractive index and has a periodic array of regions with a second refractive index different from the first and with predetermined radial dimensions; said optical beam having a wavelength so related to the

difference between said first and second refractive indices, to the radial dimensions of said regions and to the period of said array that, starting from a isotropic distribution of the wave vectors of said electromagnetic radiation within a first angular range that is twice the angular extension of the first Irreducible Brillouin zone of said photonic crystal, the group velocity vectors corresponding to said wave vectors are rearranged during propagation in said photonic crystal that at least 50% of the group velocity vectors become directed within a second angular range that is about one-third of said first angular range and the width at half-maximum of the distribution of the modules of said group velocity vectors is lower than about two-third of said second angular range.